

Accelerating rate calorimetry as a technic for analysing influence of pressure in situ combustion processes

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© SGEM2018. This work devoted to study in situ combustion processes of crude oil at different pressures. The crude oils from Russian Federation were selected field. Oxidation process in reservoir conditions (50.7, 83.8, 101.2, 125.5 bars and 50 °C) was studied for crude oil. The combustion study was investigated by accelerating rate calorimetry (ARC). Arrhenius kinetic parameters were determined for crude oils. The correlation between reaction duration and initial pressure was found.

<http://dx.doi.org/10.5593/sgem2018/1.4/S04.029>

Keywords

ARC, Kinetics parameters, Pressure

References

- [1] D.V. Yannimaras, D.L. Tiffin, Screening of oils for in-situ combustion at reservoir conditions by accelerating-rate calorimetry, SPE Reservoir Engineering (Society of Petroleum Engineers), 10 (1995) 36-39.
- [2] R.G. Moore, C.J. Lareshen, M.G. Ursenbach, S.A. Mehta, J.D.M. Belgrave, Canadian perspective on in situ combustion, Journal of Canadian Petroleum Technology, 38 (1999) 50.
- [3] R.G. Moore, M.G. Ursenbach, C.J. Lareshen, J.D.M. Belgrave, S.A. Mehta, Ramped temperature oxidation analysis of Athabasca Oil Sands bitumen, Journal of Canadian Petroleum Technology, 38 (1999) 52.
- [4] R.G. Moore, J.D.M. Belgrave, M.G. Ursenbach, C.J. Lareshen, S.A. Mehta, P.A. Gomez, K.N. Jha, In situ combustion performance in steam flooded heavy oil cores, Journal of Canadian Petroleum Technology, 38 (1999) 50.
- [5] R.G. Moore, C.J. Lareshen, S.A. Mehta, M.G. Ursenbach, J.D.M. Belgrave, J.G. Weissman, R.V. Kessler, Downhole catalytic upgrading process for heavy oil using in situ combustion, Journal of Canadian Petroleum Technology, 38 (1999) 54.
- [6] L.J.J. Catalan, A.K.M. Jamaluddin, R.G. Moore, M.G. Ursenbach, N. Okazawa, S.A. Mehta, Flare pit waste remediation by low temperature oxidation, Journal of Canadian Petroleum Technology, 37 (1998) 35-42.
- [7] R.G. Dos Santos, J.A. Vidal Vargas, O.V. Trevisan, Thermal analysis and combustion kinetic of heavy oils and their asphaltene and maltene fractions using accelerating rate calorimetry, Energy and Fuels, 28 (2014) 7140-7148.
- [8] J.A.V. Vargas, R.G. Dos Santos, O.V. Trevisan, Evaluation of crude oil oxidation by accelerating rate calorimetry: Effects of combustion process variables on thermal and kinetic parameters, Journal of Thermal Analysis and Calorimetry, 113 (2013) 897-908.